

REMARKS

This is intended as a full and complete response to the Final Office Action dated May 30, 2008, having a shortened statutory period for response set to expire on August 30, 2008. In view of the following amendment and discussion, the Applicants believe all claims are in allowable form.

CLAIM REJECTIONS

A. 35 U.S.C. §103 Claims 1-5, 7 and 9-13

Claims 1-5, 7 and 9-13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent Publication No. 2001/0034140 published October 25, 2001 to *Shioya, et al.* (hereinafter referred to as "*Shioya*") in view of United States Patent No. 6,211,096 issued April 3, 2001 to *Allman, et al.* (hereinafter referred to as "*Allman*"). In response, the Applicants have amended claims 1 and 7 to more clearly recite certain aspects of the invention.

Independent claims 1 and 7 recite elements not taught or suggested by the combination of *Shioya* and *Allman*. *Shioya* teaches a method to deposit a silicon carbon film. *Allman* teaches using TEOS precursor along with N₂O and O₂ gas to deposit a dielectric film. However, neither *Shioya* nor *Allman*, alone or in combination, teaches or suggests controlling a carbon content of the low dielectric constant film at between about 5 and about 30 atomic percent, as recited by claims 1 and 7. The Examiner asserts that *Allman* would have inherently had a carbon content within the claimed range since the carbon content depicts on the selected percentage disclosed by *Allman* is within the claimed range for the ratio of N₂O gas to the total oxidizing gas. The Applicants respectfully disagree.

Allman teaches that "By reacting N₂O and O₂ within selected percentage with TEOS, different percentage of carbon can be left behind in the film." However, *Allman* does not teach or suggest what particular range of the carbon percentage would be a desired range for forming the low dielectric constant film. Furthermore, the main precursor, as taught by *Allman*, is TEOS, not a cyclic organosiloxane, as claimed in the present application. As one of skill artisan would know, different precursors would dramatically impact on dielectric constant and carbon content in the resultant film. As

the teaching of *Allman* is specifying in using the gas mixture consisting of TEOS, N₂O and O₂ gas, there is no reasonable expectation of success that the resultant film would have similar film properties when the main precursor TEOS has been switched to another precursor. Furthermore, neither *Shioya* nor *Allman*, teaches or specifies what range of carbon content in the resultant film is desired. Additionally, there is no teaching or suggestion from *Allman* that would suggest one of ordinary skill in the art to modify its main precursor, TEOS, to the precursor as taught by *Shioya*, as asserted by the Examiner, to form the low dielectric constant film at a certain desired carbon content range.

The Applicants respectfully submit that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. (see MPEP 2163.07(a)). Accordingly, since neither *Shioya* nor *Allman* specifies what range of carbon content in the resultant film is desired, there are no teachings in the references that would suggest one of ordinary skill in the art to yield controlling a carbon content of the low dielectric constant film at between about 5 and about 30 atomic percent, as claimed in the present application, and the Examiner's assertion of inherency is not established as the missing element, carbon content of between about 5 and about 30 atomic percent, is never discussed or taught in either of the references. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, Applicants submit that independent claims 1 and 7 and all claims depending therefrom are patentable over *Shioya* in view of *Allman*. Accordingly, the Applicants respectfully request the rejection be withdrawn.

B. 35 U.S.C. §103 Claims 6 and 14

Claims 6 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Shioya* in view of *Allman* and further in view of United States Patent No. 6,582,777 issued June 24, 2003 to Ross, *et al.* (hereinafter referred to as "*Ross*"). In response, the Applicants have amended claims 1 and 7 to more clearly recite certain aspects of the invention.

Independent claims 1 and 7, from which claims 6 and 14 depend, recites elements not taught or suggested by the combination of *Shioya*, *Allman* and *Ross*. The patentability of claim 1 over *Shioya* and *Allman* has been discussed above. *Ross* is cited by its teaching for exposing a chemical vapor deposited dielectric layer to electron beam radiation for a sufficient time. *Ross* does not teach or suggest delivering a gas mixture comprising two or more oxidizing gases comprising N₂O and O₂ to a substrate in a chamber, wherein a ratio of a flow rate of the N₂O to a total flow rate of the two or more oxidizing gases into the chamber is between about 0.1 and about 0.5 and controlling a carbon content of the low dielectric constant film at between about 5 and about 30 atomic percent, as recited by claims 1 and 7. Therefore, there is no teaching or suggestion from *Ross* that would suggest with a reasonable expectation of success to one of ordinary skill in the art to modify the teaching of *Allman* and *Shioya* that would yield delivering a gas mixture comprising two or more oxidizing gases comprising N₂O and O₂ to a substrate in a chamber, wherein a ratio of a flow rate of the N₂O to a total flow rate of the two or more oxidizing gases into the chamber is between about 0.1 and about 0.5 to deposit a low dielectric constant film, and controlling a carbon content of the low dielectric constant film at between about 5 and about 30 atomic percent, as recited by claims 1 and 7. As such, a *prima facie* case of obviousness has not been established as the references fail to teach each claimed element.

Thus, Applicants submit that claims 6 and 14, which depend from claims 1 and 7 respectively, is patentable over *Shioya* in view of *Allman* and further in view of *Ross*. Accordingly, the Applicants respectfully request the rejection be withdrawn.

DOUBLE PATENTING

Claims 1-5 stand rejected under obviousness-type double patenting as being unpatentable over claims 1, 9 and 13-14 of United States Patent No. 6,797,643 in view of *Allman*. Claim 6 stands rejected under obviousness-type double patenting as being unpatentable over claim 1 of United States Patent No. 6,797,643 in view of *Allman* and in view of *Ross*. Claims 7 and 9-13 stand rejected under obviousness-type double patenting as being unpatentable over claims 1, 9 and 13-14 of United States Patent No. 6,797,643 in view of *Allman* and further in view of *Li*. Claim 14 stands rejected under the obviousness-type double patenting as being unpatentable over claim 1 of United States Patent No. 6,797,643 and in view of *Allman* and *Li* and further in view of *Ross*. Claims 7 and 9-13 stand rejected under obviousness-type double patenting as being unpatentable over claims 1, 9 and 13-14 of United States Patent No. 6,797,643 in view of *Allman* and further in view of *Shioyai*. Claim 14 stands rejected under obviousness-type double patenting as being unpatentable over claim 1 of United States Patent No. 6,797,643 in view of *Allman* and *Shioya*. In response, the Applicants agree to file a Terminal Disclaimer under 37 C.F.R. §1.130(b) to obviate the rejection once the rejections to the claims under 35 U.S.C. §§102, 103 and 112 have been withdrawn.

CONCLUSION

Thus, for at least the reasons discussed above, Applicants submit that all claims are in condition for allowance. Accordingly, the Applicants respectfully request reconsideration of this application and its early allowance.

If the Examiner believes that any unresolved issues still exist, it is requested that the Examiner telephone Mr. Keith Taboada at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

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Respectfully submitted,



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